

REMARKS

REVIEW

The current application, as previously amended, sets forth claims 1-44. Claims 16-35 have been withdrawn as a result of a restriction requirement. Of the remaining claims, Claims 1 and 41 are independent claims. Claims 6, 7, 9 and 15 have been cancelled.

Presently, no claims have been indicated as allowed in view of the prior art. Claims 1 - 5, 36-39 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over *Brown, et al* (U.S. Patent No. 5,288,619) in view of *Ergün, et al* (U.S. Pat. No. 6,440,057). Claims 8, 10-14 and 40 stand rejected in light of *Brown, et al*, in view of *Ergün, et al*, and in further view of *Perkins, Jr* (U.S. Patent No. 2,447,529). Claims 41-44 stand rejected over *Perkins, Jr*, in view of *Martin* (U.S. 5,395,593).

CLAIM OBJECTIONS

Former Claim 15 has been changed to indicate that it has been cancelled.

35 U.S.C. § 103(a) REJECTIONS

Claims 1-5 and 36-39. The Office rejected independent Claims 1 through 5 and 36 through 39 as being allegedly obvious over *Brown, et al* in view of *Ergün, et al*. However, the proposed combination does not teach or suggest every element of Claim 1 as amended. The Office concedes that *Brown, et al* does not teach placing an ultrasonic device in the reaction chamber. (Detailed Action, pg. 3).

Ergün, et al teaches a system for producing fatty acid methyl ester through transesterification of animal or vegetable fats by combining an alcohol and an alkaline solution in a mixing vessel, and then supplying the resulting mixture to a reaction chamber simultaneously with a fat. Fig. 1; Col. 7, ll. 25-40 The reaction chamber, which is maintained at high pressure, is disclosed simply to have a dynamic emulsifier, a crack emulsifier, or a turbulator (Col. 8, ll. 51-55). This mixture is then distilled. *Ergün, et al* suggests advantages to using an ultrasound device (Col. 8, ll. 55-58), but fails to disclose description of a structure that teaches where and how such an ultrasound device may be mounted to a reaction chamber.

Although, the rejection should be withdrawn based upon the above remarks, the third element of a *prima facie* case is also missing. The combination still does not teach every element of Claim 1. Namely, it does not teach or suggest a reactor with an ultrasonic device having an ultrasonic transmission horn extending into the chamber such that the horn is in direct contact the emulsion to be radiated.. Page 3 of the Detailed Action provides the conclusory statement that “Ergun teaches equipping directly (considered directly coupling) the reaction chamber with an ultrasound device (figure 1:8, col. 7, lines 59-62 and col. 8, lines 54-58).” A close analysis of Figure 1 of *Ergün, et al*, does not disclose an ultrasound device at all, much less an ultrasound device having a horn extending into the chamber. The description accompanying reference numeral 8 of Figure 1 refers to that component only as a “transesterification section or reaction section” Col. 7, ll. 34-5, l. 43. The excerpts referenced in the office action only say that it is possible to use ultrasound with the reaction,

but that is far from teaching and enabling the structure set forth in Claim 1.¹ Applicant respectfully submits that the proposed combination still does not teach all of the limitations of Claim 1 and therefore, the Office Action fails to establish a *prima facie* case of obviousness. As a result, the rejection is due to be withdrawn.

Claims 2-5, 36-39. Claims 2 through 5, and 36 through 39 depend from Claim 1. Applicant submits that in light of the above amendments and the remarks as discussed above, Claim 1 is now non-obvious under 35 U.S.C. § 103(a). Any claim depending from Claim 1 is now non-obvious as well. *See* MPEP § 2143.03. Accordingly, Claims 2 through 5, and 36 through 39 are nonobvious and Applicant requests withdrawal of the rejection as to these claims.

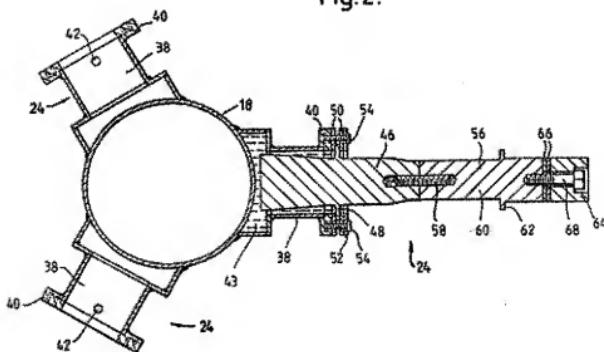
Claims 8, 10-14 and 40. These claims were rejected as being unpatentable over *Brown, et al*, in view of *Ergun, et al*, and in further view of *Perkins, Jr.* Claims 8, 10 through 14 and 40 depend from Claim 1. Applicant submits that in light of the above amendments and the remarks as discussed above, Claim 1 is now nonobvious under 35 U.S.C. § 103(a). Any claim depending from Claim 1 is now nonobvious as well. *See* MPEP § 2143.03. Accordingly, Claims 8-15, and 40 are nonobvious and Applicant requests withdrawal of the rejection as to these claims.

¹ "Enlargement of the border surfaces is also possible by means of ultrasound. It is therefore quite conceivable to equip the reaction section with an ultrasound device." Col. 7, ll. 59-62. This sentence is repeated at Col. 8, ll. 55-7.

Claims 41-44. The Office Action rejects Claims 41 through 44 as obvious in light of *Perkins, Jr.* in view of *Martin*. Claim 41 has been amended to include the limitation that the ultrasonic horn extending into the interior of the reaction chamber is in direct contact with the emulsion to be irradiated. *Perkins, Jr.*, as conceded in the Office Action, does not discuss or suggest the use of ultrasound in its conditioning element (Fig.1: 123).

Martin teaches the use of an ultrasonic device in its structure, but the horn is not in direct contact with the liquid to be irradiated. *Martin* discloses two embodiments with ultrasonic devices. Figure 2 of *Martin* shows the first embodiment and is inserted below. As described by *Martin* “24” in Figure 2 below is an “ultrasonic module” (Col 2, ll. 41-44). The module is described to include a “coupler” (46), a “transducer assembly” (56) which itself consists of a “coupling block” (60) that is attached to the coupler with a screw 58. The ultrasonic module (24) is mounted to the wall of a duct (18) with a collar assembly 38. It can be seen that the collar assembly holds the module away from the wall of the duct by some distance. See also Col. 4, ll. 28 – 33. In addition, *Martin* discloses that there is a “buffer liquid” or “olive oil” (43) that is circulated in the space between the end of the module and the wall of the duct. In operation, the liquid to be irradiated is impelled into the duct 18.

Fig. 2.



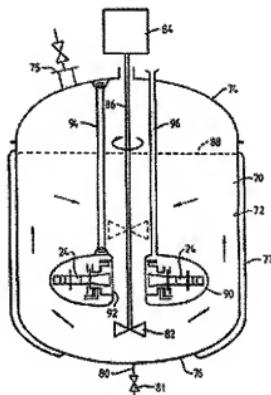
Therefore, the structure of the first embodiment disclosed in *Martin* would have a duct wall and buffer liquid between the end of the ultrasonic module and the liquid to be irradiated. As such, the ultrasonic module, or "transmission horn" as those skilled in the art would recognize it, is not in direct contact with the liquid to be irradiated as is required by amended Claim 41.

The second embodiment described in *Martin* with reference to Figure 3 shown below, describes a reactor vessel within which is a "hollow, gas-filled torus 90" or ring. Col. 4, l. 58. Inside the hollow ring are mounted ultrasonic modules (24). Id. at lines 63-64. The ultrasonic modules (24) are described as "identical to those described in relation to FIGS. 1 and 2." Id. at lines 64-65. Figure 3 of *Martin* shows a gap between the inner end of the horn and the inner ring wall. Therefore, the relevant structure of the second

embodiment has the horn mounted inside a gas-filled, hollow ring, with a gas and the ring wall between the ultrasonic horn (24) and the liquid to be emulsified. This does not teach or suggest that the horn (24) is directed contact with the liquid to be irradiated.

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Fig.3.



As set forth above, the prima facie case of obviousness requires that the combination proposed to render Claim 41 obviousness teach all of the limitations of Claim 41. The combination of *Perkins, Jr.* and *Martin* does not teach or suggest all of the limitations of Claim 41 as amended above. Thus, Applicant respectfully requests withdrawal of the

rejection as to Claim 41. In addition, since Claims 42 through 44 depend from Claim 41, the rejection should be withdrawn as to those claims as well.

CITED RELEVANT PRIOR ART

It is not believed that any of the prior art cited but not relied upon, alone or in combination either with each other or other cited prior art, teaches, discloses, suggests, or makes obvious the claimed features of the present invention.

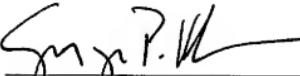
CONCLUSION

In view of the foregoing amendments and comments, Applicant respectfully requests withdrawal of the current grounds of rejection and the issuance of a formal Notice of Allowance. The Examiner is invited to telephone the undersigned at his convenience if there are any questions arising from consideration of this amendment in order to permit early resolution of the same.

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Respectfully submitted,

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